HITACHI

MODEL VM-906
MODEL VM-910
MODEL VM-129
VIDEO MONITOR

SERVICE MANUAL

Hitachi Denshi, Ltd.
TOKYO, JAPAN

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N O T I C E

This Service Manual describes the most typical product of this model. If there are any specific differences between this Manual and the servicing unit, please contact Hitachi Denshi sales office in your area.

MODEL VM-906/910/129
VIDEO MONITOR

Service Manual

I. GENERAL

The Hitachi VM-906, VM-910 and VM-129 are high performance 9 and 12-inch video monitors designed to provide an excellent quality picture display of video signals from a CCTV camera or other video signal sources. VM-906, VM-910 and VM-129 feature high reliability IC and transistor circuitry.

PRODUCT SAFETY NOTICE

(1) X-RAY RADIATION

The primary source of X-ray radiation in this monitor is the picture tube. The tube used in this monitor is especially constructed to limit X-ray radiation emission.

For continued X-ray radiation protection, the replacement tube must be the same type as the original, Hitachi approved one.

(2) PRODUCT SAFETY NOTE

Many electrical and mechanical parts in this monitor have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded necessarily rated for higher voltages, wattage, etc. Electrical components having such features are identified by marking with a ⚠ on the schematic diagram and parts list in this manual.

The use of a substitute replacement component which the Hitachi recommended replacement one, shown in the parts list in this manual, may create shock, fire, X-radiation, or other hazards.

2. SPECIFICATIONS

	VM-906	VM-910	VM-129
Format	U, C type ... EIA 525 lines, E/K type ... CCIR 625 lines		
Sync System	Internal (can be modified for external sync)		
Input Signal	1.0 Vp-p composite video; sync negative		
Input Impedance	75Ω or high impedance bridge connection		
DC Restoration Circuit	Switch selectable (no user serviceable)	Not included	Switch selectable (no user serviceable)
Effective Picture Size	182mm (7.17") x 136mm (5.35")		250 mm (9.84") x 188 mm (7.4")
CRT	9-inch, 90° deflection, 230 BRB4 or equivalent		310 FRB4 or equivalent
Power Requirement	U, C type ... 117V AC 60 Hz, E/K type ... 100/117/220/240V AC 50Hz		
	26W		30W
Ambient Temperature	-10 to +50°C (+14 to 122°F)		
Dimensions	219mm (W) x 219 (W) x 234 (D) mm (Approx. 8.62 x 8.62 x 9.21 in)		318 (W) x 284 (H) x 316 (D) mm (Approx. 12.5 x 11.2 x 12.4 in)
Weight	6.5 kg (14 lbs)	6 kg (12 lbs)	10 kg (22 lbs)
Electrical Performance Resolution	Horizontal: 700 lines Vertical: 350 lines	Horizontal: 500 lines Vertical: 300 lines	Horizontal: 700 lines Vertical: 350 lines
Video Gain	More than 35 dB: continuously		
Video Linearity	Within ± 5% to 60 Vp-p output (APL 50 % stairstep signal)		
Signal to Noise Ratio	Hum: better than 50 dB Synchronous: better than 40 dB		
Deflection Linearity	Within 1%	Within 2%	Within 2%
	(at center, with respect to picture height)		
Power Source Voltage	Abnormal operation shall not occur against +10% variation with respect to the rated AC input.		
Insulation Resistance	More than 10 MΩ (DC 500V) between AC input and chassis.		

* Design, specifications and performance are subject to change without notice due to improvement.

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3. NAMES OF EACH SECTION

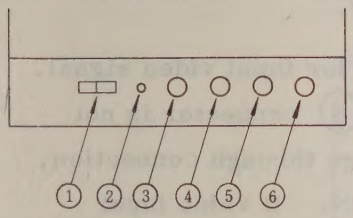


Fig. 1 Front Panel

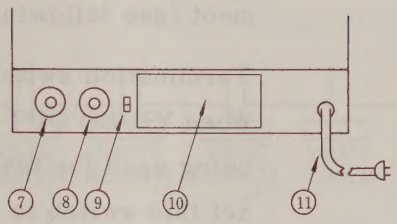


Fig. 2 Rear Panel (VM-906/910)

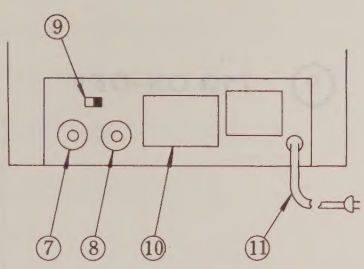


Fig. 3 Rear Panel (VM-129)

(1)	POWER	Power supply ON/OFF switch. When set to ON, picture is obtained after a few seconds.
(2)	Pilot Lamp (VM-906 only)	Lights when POWER switch is ON.
(3)	V. HOLD	Adjust control when picture rolls upwards or downwards. If picture rolls downwards, adjust control slowly until rolling stops. At this position, since circuit free oscillator frequency and signal sync frequency are the same, set V. HOLD control to just slightly clockwise of this position.
(4)	H. HOLD	Adjust control when picture sync rolls toward left or right, or to slightly change the picture position toward the left or right. Normally, picture remains synchronized within full range of control.
(5)	BRIGHT	Control for adjusting picture brightness.
(6)	CONTR(CONT)	Control for adjusting picture contrast.
(7)	VIDEO IN	Use coaxial cable to connect video input signal to this connector.

(8)	VIDEO OUT	Employ when using "bridge through" connection of the input signal to other equipment (see following).
(9)	75Ω ON-OFF	Termination switch for input video signal. When VIDEO OUT (8) connector is not being used for bridge through connection, set this switch to ON. If video input signal is bridged through to other equipment, set this switch to OFF and terminate signal at the final unit in the signal line at 75Ω (see equipment operating instructions). In cases when this monitor is the final unit, set switch to ON.
(10)	Blank Panel	Use this space for modifying video monitor to external sync type.
(11)	Power Cord	Connect to commercial AC power source.

4. ADJUSTMENT PROCEDURE

4.1 B/W MAIN-I PCB

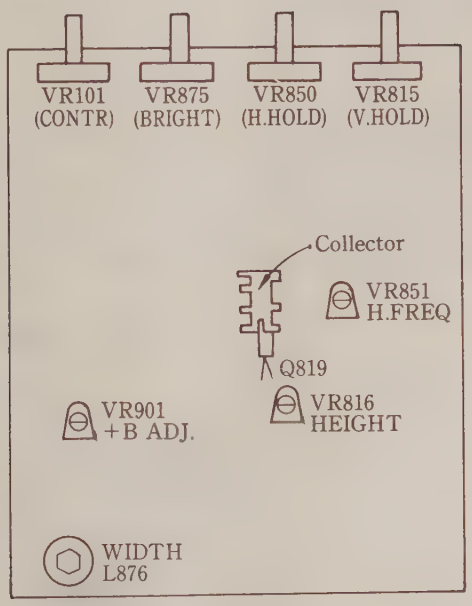


Fig. 4

1) +B Voltage (VR901)

Connect DC voltmeter between chassis (GND) and Q819 collector (heatsink) and with trimmer driver turn [+B ADJ] to adjust. This is normally adjusted for 12 $\pm$0.5V.

2) H. FREQ (VR851)

Adjust if picture rolls toward left or right. Set H FREQ (VR851) to position where picture does not roll with full range operation of H. HOLD control or when POWER switch is operated ON-OFF.
In this case, care must be taken for not touching a metal screwdriver to Q819 collector.

3) V. HOLD (VR815)

Turn control left and right. In center of range where upward or downward picture roll begins, set control to position where optimum interlace is obtained.

4) HEIGHT (VR816)

Adjusts vertical amplitude. Set to position where picture vertical amplitude completely fills CRT mask, but loss of raster does not occur. If vertical roll is obtained at this time, readjust V. HOLD (VR815).

5) WIDTH (L876)

Adjusts horizontal amplitude. Set to position where picture horizontal amplitude completely fills CRT mask, but loss of raster does not occur. Be sure to use a plastic hexagonal core driver for adjusting this coil. A metal tool (Allen wrench, etc.) can damage the core.

4.2 CRT-2 PCB

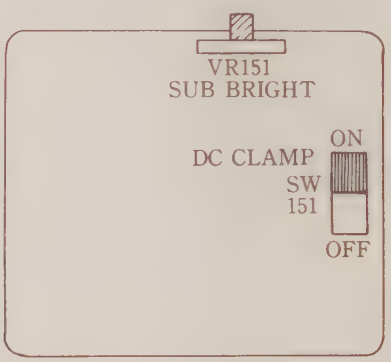


Fig. 5

1) SUB BRIGHT (VR151) (VM-906/129)

Adjust only when DC CLAMP switch (SW151) is ON. Set BRIGHT (VR875) control to maximum and CONTR (VR101) control to minimum, then adjust so that raster is slightly observable.

2) DC REST ON-OFF (SW151) (VM-906/129)

ON/OFE switch for DC restoration circuit. In standard sets, the switch has been preset as follows:

VM-906 U,C	OFF
VM-906 E/K	ON
VM-129 U,C	OFF
VM-129 E,K	ON

Since DC restoration circuit provides an effective function in cases when black level decline becomes a problem, employ according to application.

3) FOCUS(VR152) (VM-129)

Set BRIGHT and CONTR controls to normal operating positions, then adjust this control for best and uniform focus at center and edges of picture. Use adequate care when adjusting, since approx. 350V is present at this control.

4.3 CRT Section Adjustments

1) Picture Inclination

Deflection yoke can be turned by loosening clamp screw. When adjusting, press yoke toward CRT and observe vertical inclination condition near center of picture. Tighten deflection yoke clamp screw firmly after adjusting.

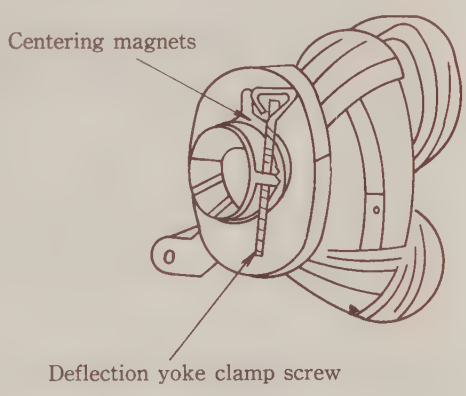


Fig. 6 Deflection yoke

2) Picture Position

Perform by mutually adjusting deflection yoke centering magnets (2 magnets). Magnetic field is strongest when both magnets are overlapped, at which position picture movement becomes greatest. Note that if picture position is changed excessively by using the centering magnets, deflection distortion and impaired linearity can occur. Some movement in horizontal direction can also occur when H. HOLD control is operated.

4.4 Adjustment Notes

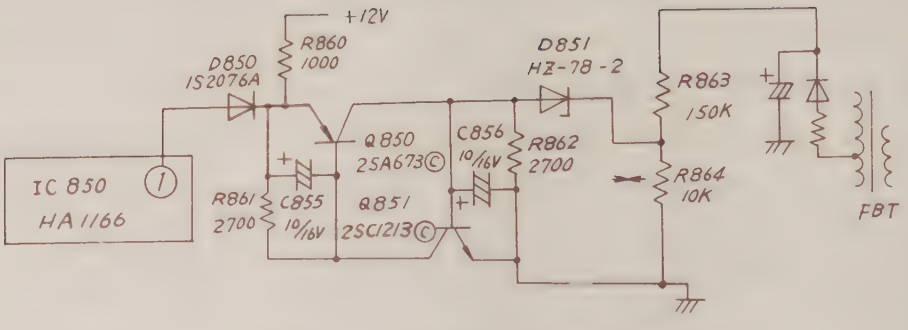


Fig. 7 X-ray prevention circuit

An X-ray prevention circuit is adopted in the horizontal deflection circuit. Note that in the following circumstances, horizontal oscillation stops and raster is not obtained.

1) Power supply voltage rises excessively above +12V.
2) H. Freq. is reduced sharply.
3) Breakdown of resonating capacitors C867 & C868.

In even oscillation stops, set POWER switch to OFF and inspect for above 3 items.

To re-establish oscillation:

1) Return above 3 items to normal operating mode.
2) Set POWER switch to OFF and wait several seconds before setting it to ON.

5. MODIFICATION PROCEDURE

Modification for External Sync Operation

1) Circuit diagram modification

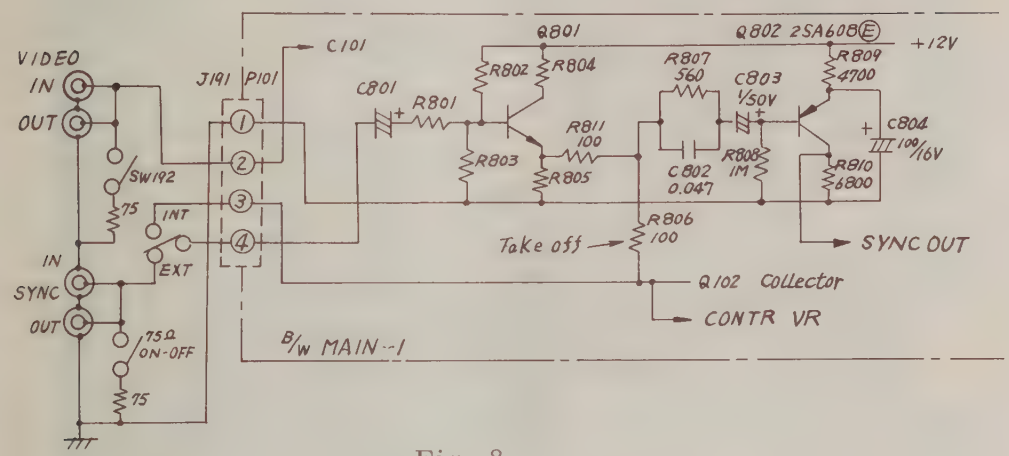


Fig. 8

2) Parts list

Symbol	Description				Qty	Part Code
	UHF type connector, S-I 9321				2	J45132020
	Slide switch, SS(F) 12-07				2	J32000045
	Carbon resistor	R1/4W	75Ω	±5%	1	H51623750
	Terminal	29002#2			2	K17910021
Q 801	Transistor	2SC458 C			1	H23300017
R 801	Carbon resistor	1/4W	10kΩ	±5%	1	H51523103
802	"	"	"	"	1	H51523103
803	"	"	"	"	1	H51523103
804	"	"	100Ω	"	1	H51523101
805	"	"	2000Ω	"	1	H51523272
811	"	"	100Ω	"	1	H51523101
C 801	Elyc capacitor	33μF	16WV	+50% -10%	1	H71131330

3) Assembly wiring

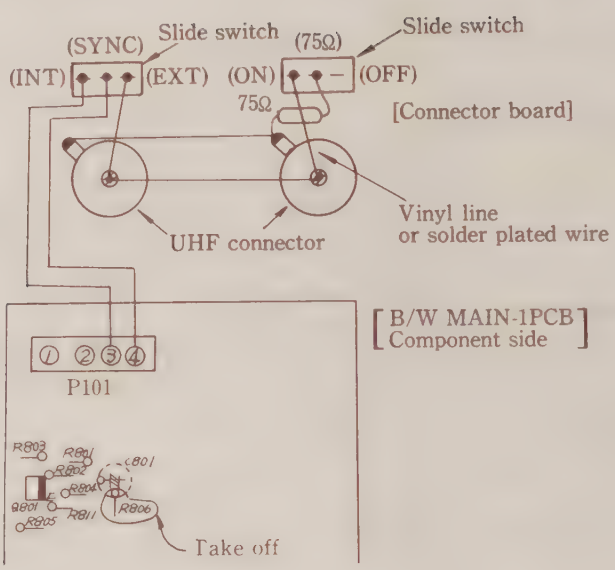


Fig. 9

4) Wiring steps

a) Remove the blank panel.

b) Install a UHF connector (and a slide switch) to the external sync connector panel.

c) Make connection as illustrated in Fig. 9.

d) Install the external sync connector panel instead of the blank panel.

e) Remove R806 from B/W MAIN-1 PCB.

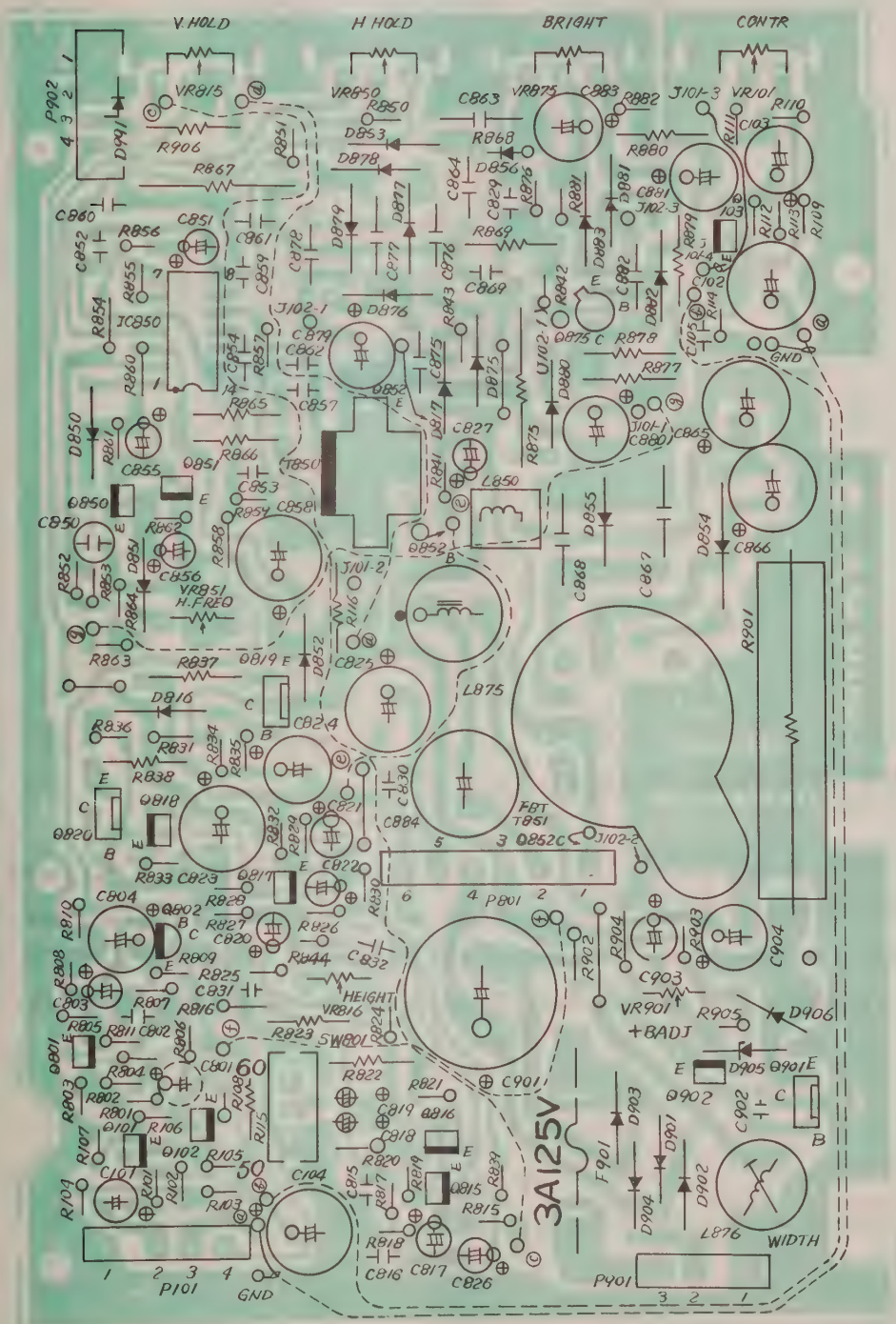
f) Add Q801, R801-805, R811 and C801 onto B/W MAIN-1 PCB.

5) Operating check

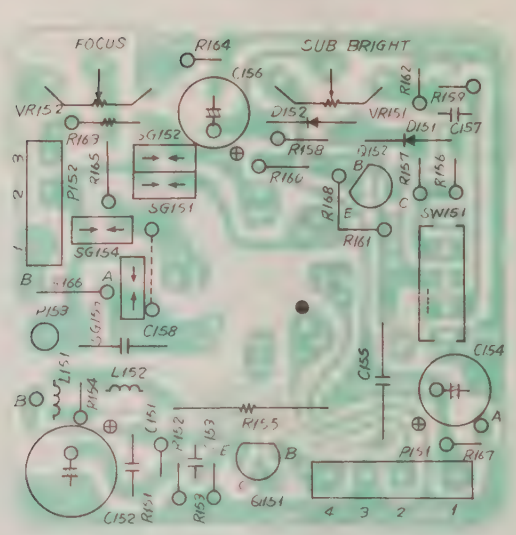
Apply specified signal (sync 4 ±2V) and confirm operation. If sync signal is lower than specification, change R801 value by approx. 1 kΩ.

6. ELECTRICAL PARTS ARRANGEMENT

B/W MAIN-1 PCB



CRT-2 PCB



7. ELECTRICAL PARTS LIST

PRODUCT SAFETY NOTICE --- Components marked with ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this manual. Do not degrade the safety of this monitor through improper servicing.

7.1 MODEL VM-906

B/W MAIN-1 PCB

Part Code	Symbol		Description				Remarks
			IC				
ILH0073	IC	850	HA1166				
			Transistors				
HTC0148	Q	101	2SC458C				
HTA0085		102	2SA673C				
HTC0148		103	2SC458C				
HTA0152		802	2SA608E				
HTC0148		815	2SC458C				
"		816	"				
HTA0085		817	2SA673C				
HTC0148		818	2SC458C				
HTD0073		819	2SD726C				
HTB0069		820	2SB690C				
HTA0085		850	2SA673C				
HTC0057		851	2SC1213C				
HTC0424		852	2SC681ARD				
HTC0327		875	2SC1706-H				
HTD0073		901	2SD726C				
HTA0085		902	2SA673C				
			Diodes				
HDS0110	D	816	1S2076A				
"		817	"				
HDS0110		850	1S2076A				
HDH0124		851	HZ7B2				
HDS0110		852	1S2076A				
HDV0043		853	V09C				
HDU0014		854	U06C				
HDV0043		855	V09C				
"		856	"				
HDE0022							
HDE0022		877	ERZ08D3K181				
		878	Not Used				
		879	"				
HDV0043		880	V09C				
HDS0110		881	1S2076A				
"		882	"				
HDV0043		883	V09C				
HDV0013		901	V03C				
"		902	"				
"		903	"				
"		904	"				
HDH0033		905	HZ6B				
HDS0110		906	1S2076A				
HDS0408		991	SR503D				
			Resistors				
RCE0138	R	101	Carbon	1/4W	1000Ω	±5%	
RCE0177		102	"	"	22kΩ	"	
"		103	"	"	"	"	
RCE0139		104	"	"	10kΩ	"	
RCE0226		105	"	"	560Ω	"	
RCE0246		106	"	"	820Ω	"	
RCE0206		107	"	"	390Ω	"	
RCE0137		108	"	"	100Ω	"	
"		109	"	"	"	"	
RCE0177		110	"	"	22kΩ	"	
RCE0138		111	"	"	1000Ω	"	
RCE0139		112	"	"	10kΩ	"	
RCE0247		113	"	"	8200Ω	"	
RCE0138		114	"	"	1000Ω	"	
RCE3893		115	"	"	100Ω	"	
RCE3891		116	"	"	8.2Ω	"	
RCE0137	R	806	Carbon	1/4W	100Ω	±5%	
RCE0226		807	"	"	560Ω	"	
RCE0198		808	"	"	330kΩ	"	
RCE0216		809	"	"	4700Ω	"	
RCE0238		810	"	"	6800Ω	"	
		811	Not Used				
		812	"				
		813	"				
		814	"				
RCE0227		815	Carbon	1/4W	5600Ω	±5%	
RCE0216		816	"	"	4700Ω	"	
"		817	"	"	"	"	
RCE0217		818	"	"	47kΩ	"	
RCE0227		819	"	"	5600Ω	"	

Part Code	Symbol		Description				Remarks
RCE0196	R	820	Carbon	1/4W	3300Ω	±5%	
RCE0167		821	"	"	1800Ω	"	
RCR3887		822	"	"	3.3Ω	"	
RCR3885		823	"	"	2.2Ω	"	
RCE0186		824	"	"	2700Ω	"	
RCE0177		825	"	"	22kΩ	"	
RCE0228		826	"	"	56kΩ	"	
RCE0177		827	"	"	22kΩ	"	
RCE0156		828	"	"	1500Ω	"	
RCE0174		829	"	"	22Ω	"	
RCE0147		830	"	"	1200Ω	"	
RCE0166		831	"	"	180Ω	"	
RCE0196		832	"	"	3300Ω	"	
RCE0225		833	"	"	56Ω	"	
RCE0175		834	"	"	220Ω	"	
"		835	"	"	"	"	
RCE0236		836	"	"	68Ω	"	
RCR8338		837	"	1/2W	1Ω	"	
"		838	"	"	"	"	
RCE0138		839	"	"	"	"	
		840	Not Used				
RCE0227		841	Carbon	1/4W	5600Ω	±5%	
RCE0156		842	"	"	1500Ω	"	
RCE0137		843	"	"	100Ω	"	
RCE0228		844	"	"	56kΩ	"	
		845	Not Used				
		846	"				
		847	"				
		848	"				
		849	"				
RCE0158		850	Carbon	1/4W	150kΩ	±5%	
RCE0198		851	"	"	330kΩ	"	
RCE0157		852	"	"	15kΩ	"	
RCE0158		853	"	"	150kΩ	"	
"		854	"	"	"	"	
RCE0157		855	"	"	15kΩ	"	
RCE0247		856	"	"	2800Ω	"	
RCE0176		857	"	"	2200Ω	"	
RCE0196		858	"	"	3300Ω	"	
RCE0247		859	"	"	8200Ω	"	
RCE0138		860	"	"	1000Ω	"	
RCE0186		861	"	"	2700Ω	"	
"		862	"	"	"	"	
RCE0158		863	"	"	150kΩ	"	
RCE0139		864	"	"	10kΩ	"	
RCR3893		865	"	1/2W	100Ω	"	
RCR3892		866	"	"	10Ω	"	
RMR2976		867	Metal	2W	4700Ω	"	
RMR2951		868	"	1W	10kΩ	"	
RCR3981		869	Carbon	1/2W	82kΩ	"	
RMR2973	R	875	Metal	2W	33Ω	±5%	
RCE0156		876	Carbon	1/4W	1500Ω	"	
RCR3925		877	"	1/2W	22kΩ	"	
"		878	"	"	"	"	
RCR3895		879	"	"	10kΩ	"	
RCR3957		880	"	"	47kΩ	"	
RCE0104		881	"	1/4W	560kΩ	"	
RCE0217		882	"	"	47kΩ	"	
RCR4050		883	"	"	100kΩ	"	
RWE0001	R	901	Wire Wound	10W	27Ω	±5%	
RCR3937		902	Carbon	1/2W	330Ω	"	
RCE0176		903	"	1/4W	2200Ω	"	
RCE0156		904	"	"	1500Ω	"	
RCE0136		905	"	"	10Ω	"	
RCR3979		906	"	1/2W	820Ω	"	
			Capacitors				
CEX0184	C	101	Elyc	16V	33μF		
CEX0172		102	"	10V	330μF		
CEX0180		103	"	16V	100μF		
CEX0185		104	"	"	330μF		
CCT0098		105	Ceramic	50V	0.047μF		
CQA0013	C	802	Plastic	50V	0.047μF	±10%	
CEX0218		803	Elyc	"	1μF		
CEX0180		804	"	16V	100μF		
CQA0013		815	Plastic	50V	0.047μF	±10%	
CQA0015		816	"	"	0.1μF	"	
CEX0218		817	Elyc	"	1μF		
CSC0173		818	Tantal	16V	10μF	±20%	
CST0398		819	"	"	2.2μF		J, E, K Type
CEX0179		820	Elyc	"	10μF		
CEX0184		821	"	"	33μF		J, L, C Type
CEX0218		822	"	50V	1μF		
CEX0185		823	"	16V	330μF		
CEX0180		824	"	"	100μF		
CEX0169		825	"	10V	1000μF		
CEX0218		826	"	50V	1μF		

Part Code	Symbol		Description				Remarks
CEX0184	C	827	Elyc	16V	33μF		
		828	Not Used				
CEX0032		821	Elyc	25V	47μF	±20%	J,E,K Type
CQA0003		829	Plastic	50V	0.001μF	±10%	
CQA0015		830	"	"	0.1μF	"	
"		832	"	"	"	"	
CQA0020		850	"	"	0.0033μF	±5%	
CEX0218		851	Elyc	"	1μF		
CQA0007		852	Plastic	"	0.0047μF	±10%	
CCV0113		853	Ceramic	"	560pF	±5%	
"		854	"	"	"	"	
CEX0179		855	Elyc	16V	10μF		
"		856	"	"	"		
CQA0011		857	Plastic	50V	0.022μF	±10%	
CEX0185		858	Elyc	16V	330μF		
CQA0013		859	Plastic	50V	0.047μF	±10%	
"		860	"	"	"	"	
		861	Not Used				
CQA0005		862	Plastic	50V	0.0022μF	±10%	
CQT0023		863	"	250V	0.22μF	±20%	
CQT0010		864	"	"	0.1μF	"	
CEX0185		865	Elyc	16V	330μF		
"		866	"	"	"		
CQD0012		867	Plastic	630V	0.047μF	±10%	
CQD0006		868	"	"	0.022μF	"	
CMF0048		869	Mica	500V	470pF	±5%	
CEX0238	C	880	Elyc	160V	3.3μF		
CEX0240		881	"	"	10μF		
CQT0014		882	Plastic	400V	0.1μF	±20%	
CEX0237		883	Elyc	160V	1μF		
CEX0210		884	"	25V	4.7μF	BP	
CEE0054	C	901	Elyc	25V	3300μF		
CQA0009		902	Plastic	50V	0.01μF	±10%	
CEX0184		903	Elyc	16V	33μF		
CEX0180		904	"	"	100μF		
			Var, Resistors				
RDV0199	VR	816	Carbon	B	10kΩ		
RDV0198		851	"	B	5000Ω		
RDV0197		901	"	B	1000Ω		
RDR0428		101	"	B	1000Ω		
RDR0429		815	"	B	5000Ω		
RDR0431		850	"	B	50kΩ		
RDR0430		875	"	B	500kΩ		
			Coils				
TLF0041	L	850	27μH	±10%			
TLL0043	L	875	LC-0146				
TLL0050		876	LC-0168				
			Transformers				
TTH0006	T	850	HD-12				
TTT0226		851	TC-0448				
			Connectors				
JBX0342	P	101	9952#3 (4P)				
JBX0344	P	801	9952#5 (6P)				
JBX0341	P	901	9952#2 (3P)				
JBX0368	J	101	34203#3 (UL, FR200, 4P)				
JBX0367		102	34202#3 (UL, FR200, 3P)				
			Miscellaneous				
EFG0525	F	901	Fuse	TLC-3A			J,E,K Type
EFL0140		901	"	ST5-3A			U,C Type
EFY0002	XF	901	Fuse Clip	85PN-0815			J,E,K Type 2 pcs

Part Code	Symbol		Description			Remarks
ETS0122	XF	901	Terminal	9773		U,C Type 2 pcs
SSV0109	SW	801	Switch	SSF8	12-07P	J Type
JYX0262			Pin 29002-2	(for J101)		4 pcs
"			"	(for J102)		3 pcs
ETS0122	XR	901	Terminal	9773		2 pcs
			Heat Sink 4054907 (for Q819 & 820)			2 pcs

CRT-2 PCB

Part Code	Symbol		Description				Remarks
			Transistor				
HTC0085	Q	151	2SC1514				
			Diodes				
HDS0110	D	151	1S2076A				
"		153	"				
			Resistors				
RCE0245	R	151	Carbono	1/4W	82Ω	±5%	
RCE0185		152	"	"	270Ω	"	
RCE0214		153	"	"	47Ω	"	
RCE0186		154	"	"	2700Ω	"	
RMR2976		155	Metal	2W	4700Ω	"	
RCE0139		156	Carbon	1/4W	10kΩ	±5%	
RCE0218		157	"	"	470kΩ	"	
"		158	"	"	"	"	
RCE0209		159	"	"	390kΩ	"	
		160	Not Used				
RCE0156		161	Metal	1/4W	1500Ω	±5%	
RCE0167		162	"	"	1800Ω	"	
RCE0176		163	"	"	2200Ω	"	
		164	Not Used				
		165	"				
RCE0140		166	Carbon	1/4W	100kΩ	±5%	
"		167	"	"	"	"	
			Capacitors				
CCU0114	C	151	Ceramic	50V	390pF	±5%	
CEX0172		152	Elyc	10V	330μF		
CCU0113		153	Ceramic	50V	560pF	±5%	
CEX0238		154	Elyc	160V	3.3μF		
CQT0026		155	Plastic	250V	0.47μF	±20%	
CEX0240		156	Elyc	160V	10μF		
		157	Not Used				
CQT0016		158	Plastic	400V	0.047μF	±20%	
			Coils				
TLF0019	L	151	33μH	±10%			
TLF0038		152	68μH	"			
			Var, Resistor				
RDV0298	VR	151	Carbon	B	100kΩ		
			Switch				
SSV0109	SW	151	SSFB12-07P				
			Connectors				
JBX0342	P	151	9952#3 (4P)				
JBX0341		152	9952#2 (3P)				
ETP0069		153	GT Contact Pin				

Part Code	Symbol	Description	Remarks
		Miscellaneous	
EZZ0056	SG 151	Spark Gap AG20 2kV	
"	152	" "	
"	153	" "	
"	154	" "	
DYX0010	J 151	CRT Socket 1426#2	

CHASSIS

Part Code	Symbol	Description	Remarks
		Transformers	
TTT0116	T 991	TC-0444A	J Type
TTT0117	991	TC-0445 (UL)	U,C Type
TTT0130	991	TC-0464	E,K Type
		Coil	
TLL0113	DY 891	LC-0165B	
		Switches	
SSS0063	SW 991	SDE-4SB-2 (UL, SA) TV-3	
SSV0105	191	SS(F) 12-07	
		Connectors	
JBX0368	J 191	34203#3 (UL, FR200, 4P)	
JBX0374	194	34338 (1P)	
JBX0367	891	34205#3 (UL, FR200, 6P)	
JBX0370	991	34202#3 (UL, FR200, 3P)	
JYX0262		29002-2 (for J191)	4 pcs
"		" (for J891)	6 pcs
"		" (for J991)	3 pcs
JYX0169		29000 (for J194)	
JHS0022	J 195	UHF-Type S-19321	
"	196	" "	
		Resistor	
RCR4118	R 191	Carbon 1/4W 75Ω ±5%	
DPX0032	V 191	CRT 230BRB4	
		Miscellaneous	
BBZ0073	P 991	Code Set VM-1165B 2.5M	J Type
BBZ0060	991	" STV#18VM-033 8F VM-1	U Type
BBZ0055	991	" VM-0099 8F	E,K Type
BBZ0159	991	" SJT#18 VM-0033 8F VM-1	C Type
EFL0089	F 991	Fuse SS1-1A UL	U,C,E,K Type
ETB0384		Pin ML-3182-5P	U,C,E,K Type

7.2 MODEL VM-910

B/W MAIN-1 PCB

Part Code	Symbol		Description				Remarks
			IC				
ILH0073	IC	850	HA1166				
			Transistors				
HTC0148	Q	101	2SC458C				
"		103	2SC458C				
HTA0152		802	2SA608E				
HTC0148		815	2SC458C				
"		816	"				
HTA0085		817	2SA673C				
HTC0148		818	2SC458C				
HTD0073		819	2SD726C				
HTB0069		820	2SB690C				
HTA0085		850	2SA673C				
HTC0057		851	2SC1213C				
HTC0424		852	2SC681ARD				
HTD0073		901	2SD726C				
HTA0085		902	2SA673C				
			Diodes				
HDS0110	D	816	1S2076A				
"		817	"				
HDS0110	D	850	1S2076A				
HDH0124		851	[illegible]B2				
HDS0110		852	76A				
HDV0043		853	V0[illegible]				
HDU0014		854	U06C				
HDV0043		855	V09C				
"		856	"				
HDV0043	D	880	V09C				
HDV0013	D	901	V03C				
"		902	"				
"		903	"				
"		904	"				
HDH0033		905	HZ6B				
HDS0110		906	1S2076A				
			Resistors				
RCE0138	R	101	Carbon	1/4W	100Ω	±5%	
RCE0177		102	"	"	22kΩ	"	
"		103	"	"	"	"	
RCE0139		104	"	"	10kΩ	"	
RCE0137		105	"	"	100Ω	"	
		106	Not Used				
RCE0206		107	Carbon	1/4W	390Ω	±5%	
		108	Not Used				
RCE0137		109	Carbon	1/4W	100Ω	±5%	
RCE0117		110	"	"	22kΩ	"	
RCE0138		111	"	"	1000Ω	"	
RCE0139		112	"	"	10kΩ	"	
RCE0247		113	"	"	8200Ω	"	
RCE0138		114	"	"	1000Ω	"	
RCR3893		115	"	1/2W	100Ω	"	
RCR3891		116	"	"	8.2Ω	"	
RCE0137	R	806	Carbon	1/4W	100Ω	±5%	
RCE0226		807	"	"	560Ω	"	
RCE0141		808	"	"	1MΩ	"	
RCE0216		809	"	"	4700Ω	"	
RCE0238		810	"	"	6800Ω	"	
RCE0227	R	815	Carbon	1/4W	5600Ω	±5%	
RCE0216		816	"	"	4700Ω	"	
"		817	"	"	"	"	
RCE0217		818	"	"	47kΩ	"	
RCE0227		819	"	"	5600Ω	"	
RCE0196		820	"	"	3300Ω	"	
RCE0167		821	"	"	1800Ω	"	
RCR3899		822	"	1/2W	12Ω	"	
RCR3885		823	"	"	2.2Ω	"	
RCE0186		824	"	1/4W	2700Ω	"	
RCE0177		825	"	"	22kΩ	"	
RCE0228		826	"	"	56kΩ	"	
RCE0177		827	"	"	22kΩ	"	
RCE0156		828	"	"	1500Ω	"	
RCE0174		829	"	"	22Ω	"	
RCE0147		830	"	"	1200Ω	"	
RCE0196		831	"	"	180Ω	"	
RCE0166		832	"	"	3300Ω	"	
RCE0225		833	"	"	56Ω	"	
			"				

Part Code	Symbol		Description				Remarks
RCE0175	R	834	Carbon	1/4W	220Ω	±5%	
"		835	"	"	"	"	
RCE0236		836	"	"	68Ω	"	
RCR3883		837	"	1/2W	1Ω	"	
"		838	"	"	"	"	
RCE0138		839	"	1/4W	1000Ω	"	
RCE0148		841	Carbon	1/4W	12kΩ	"	
RCE0214		842	"	"	47Ω	"	
RCE0158		850	Carbon	1/4W	150kΩ	±5%	
RCE0198		851	"	"	330kΩ	"	
RCE0157		852	"	"	15kΩ	"	
RCE0158		853	"	"	150kΩ	"	
"		854	"	"	"	"	
RCE0157		855	"	"	15kΩ	"	
RCE0247		856	"	"	8200Ω	"	
RCE0176		857	"	"	2200Ω	"	
RCE0196		858	"	"	3300Ω	"	
RCE0247		859	"	"	8200Ω	"	
RCE0138		860	"	"	1000Ω	"	
RCE0186		861	"	"	2700Ω	"	
"		862	"	"	"	"	
RCE0158		863	"	"	150kΩ	"	
RCE0139		864	"	"	10kΩ	"	
RCR3893		865	"	1/2W	100Ω	"	
RZZ0029		866	"	"	10Ω	"	
RMR2976		867	Metal	2W	4700Ω	"	
RMR2951		868	"	1W	10kΩ	"	
RMR3002		869	"	"	6800Ω	"	
RMR2973	R	875	Metal	2W	33Ω	±5%	
RCE0217		882	Carbon	1/4W	47kΩ	±5%	
RWE0001		901	Wire Wound	10W	27Ω	±5%	
RCR3937		902	Carbon	1/2W	330Ω	"	
RCE0176		903	"	1/4W	2200Ω	"	
RCE0156		904	"	"	1500Ω	"	
RCE0186		905	"	"	10Ω	"	
			Capacitors				
CEX0184	C	101	Elyc	16V	33μF		
CEX0172		102	"	10V	330μF		
CEX0180		103	"	16V	100μF		
CEX0185		104	"	"	330μF		
CCT0098		105	Ceramic	50V	0.047μF		
CQA0013	C	802	Plastic	50V	0.047μF	±10%	
CEX0218		803	Elyc	"	1μF		
CEX0180		804	"	16V	100μF		
CQA0013	C	815	Plastic	50V	0.047μF	±10%	
CQA0015		816	"	"	0.1μF	"	
CEX0218		817	Elyc	"	1μF		
CSC0173		818	Tantal	16V	10μF	±20%	
CST0398		819	"	"	2.2μF		
CEX0179		820	Elyc	"	33μF		
CEX0184		821	"	"	"		
CEX0218		822	"	50V	1μF		
CEX0185		823	"	16V	330μF		
CEX0180		824	"	"	100μF		
CEX0169		825	"	10V	1000μF		
CEX0218		826	"	50V	1μF		
CEX0184		827	"	16V	33μF		
		828	Not Used				
		829	"				
CQA0015		830	Plastic	50V	0.1μF	±10%	
CQS0020		850	Plastic	50V	0.0033μF	±5%	
CEX0218		851	Elyc	"	1μF		
CQA0007		852	Plastic	"	0.0047μF	±10%	
CCU0113		853	Ceramic	"	560pF	±5%	
"		854	"	"	"	"	
CEX0179		855	Elyc	16V	10μF		
"		856	"	"	"		
CQA0011		857	Plastic	50V	0.022μF	±10%	
CEX0185		858	Elyc	16V	330μF		
CQA0013		859	Plastic	50V	0.001μF	±10%	
"		860	"	"	"	"	
CQA0005		862	Plastic	50V	0.0022μF	±5%	
CQT0023		863	"	250V	0.22μF	±20%	
CQT0010		864	"	"	0.1μF	"	
CEX0185		865	Elyc	16V	330μF		
"		866	"	"	"		
CQD0012		867	Plastic	630V	0.047μF	±10%	
CQD0006		868	"	"	0.22μF	"	
CEX0238		880	Elyc	160V	3.3μF		
		881	Not Used				
		882	"				

Part Code	Symbol		Description			Remarks
CEX0238	C	883	Elyc	160V	1μF	
CEX0210		884	"	25V	4.7μF	BP
CEE0054		901	Elyc	25V	3300μF	
CQA0009		902	Plastic	50V	0.01μF	±10%
CEX0184		903	Elyc	16V	33μF	
CEX0180		904	"	"	100μF	
			Var, Resistors			
RDR0432	VR	101	Carbon	B	1000Ω	
RDR0425		815	"	B	5000Ω	
RDV0198		816	"	B	"	
RDR0426		850	"	B	50kΩ	
RDV0198		851	"	B	5000Ω	
RDR0433		875	"	B	500kΩ	
RDV0197		901	"	B	1000Ω	
			Coils			
TLF0041	L	850	27μH	±10%		
TLL0050		876	LC-0168			
			Transformers			
TTH0006	T	850	HD-12			
TTT0226		851	TC-0448			
			Switch			
SSV0109	SW	801	SSFB	12-07P		J Type
			Connectors			
JBX0342	P	101	9952#3 (4P) D#9406036			
JBX0344	P	801	9952#5 (6P) D#9406036			
JBX0341	P	901	9952#2 (3P) D#9406036			
JBX0368	J	101	34203#3 (UL, FR200, 4P)			
JBX0367		102	34202#3 (UL, FR200, 3P)			
			Miscellaneous			
EFG0525	F	901	Fuse	TLC-3A		J,E,K Type
EFL0140		901	"	ST5-3A UL (3A 125V)		U,C Type
EFY0002	XF	901	Fuse Clip	85PN-0815		J,E,K Type 2 pcs
		901	Terminal	9773		U,C Type 2 pcs
JYX0262			Pin	29002-2	(for J101)	4 pcs
"			"	"	(for J102)	3 pcs
ETS0122	XR	901	Terminal	9773		2 pcs
EHX0023			Heat Sink	(for Q819 & Q820)		2 pcs

CRT-2 PCB

Part Code	Symbol		Description				Remarks
			Transistor				
HTC0085	Q	151	2SC1514				
			Resistors				
RCE0225	R	151	Carbon	1/4W	56Ω	±5%	
RCE0215		152	"	"	470Ω	"	
RCE0165		153	"	"	18Ω	"	
RCE0186		154	"	"	2700Ω	"	
RMR2980		155	Metal	2W	6800Ω	"	
		156	Not Used				
		157	"				
		158	"				
RCE0209		159	Carbon	1/4W	390kΩ	±5%	
		160	Not Used				
RCE0156		161	Carbon	1/4W	1500Ω	±5%	
RCE0247		162	"	"	8200Ω	"	
RCE0176		163	"	"	2200Ω	"	
		164	Not Used				
		165	"				
		166	"				
RCE0140		167	Carbon	1/4W	100kΩ	±5%	
		168	Not Used				
RCE0141		169	Carbon	1/4 W	1MΩ	±5%	
RCR3896	VR	151	Carbon	1/2W	100kΩ	±5%	
			Capacitors				
CCU0109	C	151	Ceramic	50V	220 pF	±5%	
CEX0172		152	Elyc	10V	330μF		
CQA0005		153	Plastic	50V	0.0022μF	±10%	
CEX0240		154	Elyc	160V	10μF		
CQT0026		155	Plastic	250V	0.47μF	±20%	
		156	Not Used				
		157	"				
CQT0016		158	Plastic	400V	0.047μF	±20%	
			Coils				
TLF0068	L	151	120μH	±10%			
TLF0067		152	100μH	"			
			Connectors				
JBX0342	P	151	9952#3 (4P) D#9406036				
JBX0341		152	9952#2 (3P) D#9406036				
ETP0069		153	Contact	GT			
			Miscellaneous				
EZZ0056	SG	151	Spark Gap	AG20	2kV		
		152	Not Used				
EZZ0056		153	Spark Gap	AG20	2kV		
DYX0010	J	151	CRT Socket		1426#2		

CHASSIS

Part Code	Symbol		Description				Remarks
DPX0032	V	191	CRT	230BRB4			
			Resistor				
RCR4118	R	191	Carbon	1/4W	75Ω	±5%	
			Coil				
TLL0113	DY	991	LC-0165B				
			Transformers				
TTT0116	T	991	TC-0444A				J Type
TTT0117		991	TC-0445 (UL)				U,C Type
TTT0130		991	TC-0464				E,K Type

Part Code	Symbol	Description	Remarks
		Switches	
[illegible]	SW [illegible]	SS(F) 12-07	
[illegible]	[illegible]	SDE-4SB-2 (UL, CSA)	
		Connectors	
JBX0368	J [illegible]	34203#3 (UL, FR200, 4P)	
JBX0374	J [illegible]	34338 (1P)	
JHS0022	[illegible]	S-19321 (UHF-Type)	
"	[illegible]	" "	
JBX0370	[illegible]	34205#3 (UL, FR200, 6P)	
JBX0367	[illegible]	34202#3 (UL, FR200, 3P)	
JYX0262	[illegible]	29002-2 (for J191	[illegible]
"	"	" (for J891)	[illegible]
"	"	" (for J991)	[illegible]
JYX0169	[illegible]	29000 (for J194)	
		Miscellaneous	
BBZ0073	[illegible]	Code Set VM-1165B	[illegible]
BBZ0060	[illegible]	" STV#18 VM-033	[illegible]
BBZ0055	[illegible]	VM-0099	[illegible]
BBZ0159	[illegible]	" SJT#18 VM-0033	[illegible]
EFL0089	F [illegible]	Fuse SS1-1A	[illegible]
ETB0384		Terminal ML-3182-5P	U,E,F,K type

7.3 MODEL VM-129

B/W MAIN-1 PCB

Part Code	Symbol		Description				Remarks
			IC				
ILH0073	IC	850	HA1166				
			Transistors				
HTC0148	Q	101	2SC458C				
HTA0085		102	2SA673C				
HTC0148		103	2SC458C				
HTA0152		802	2SA608E				
HTC0148		815	2SC458C				
"		816	"				
HTA0085		817	2SA673C				
HTC0148		818	2SC458C				
HTD0073		819	2SD726C				
HTB0069		820	2SB690C				
HTA0085		850	2SA673C				
HTC0057		851	2SC1213C				
HTC0424		852	2SC681ARD				
HTC0327		875	2SC1706H				
HTD0073		901	2SD726C				
HTA0085		902	2SA673C				
			Diodes				
HDM0069	D	815	MV-13				
HDS0110		816	1S2076A				
"		817	"				
HDS0110		850	1S2076A				
HDH0124		851	HZ7B2				
HDS0110		852	1S2076A				
HDV0043		853	V09C				
HDU0014		854	U06C				
HDV0043		855	V09C				
HDV0043		875	V09C				
"		876	"				
"		877	"				
"		878	"				
"		879	"				
"		880	"				
HDS0110		881	1S2076A				
"		882	"				
HDV0043		883	V09C				
HDV0013		901	V03C				
"		902	"				
"		903	"				
"		904	"				
HDH0033		905	HZ6B				
HDS0110		906	1S2076A				
			Resistors				
RCE0138	R	101	Carbon	1/4W	1000Ω	±5%	
RCE0177		102	"	"	22kΩ	"	
"		103	"	"	"	"	
RCE0139		104	"	"	10kΩ	"	
RCE0226		105	"	"	560Ω	"	
RCE0246		106	"	"	820Ω	"	
RCE0206		107	"	"	390Ω	"	
RCE0137		108	"	"	100Ω	"	
"		109	"	"	"	"	
RCE0177		110	"	"	22kΩ	"	
RCE0138		111	"	"	1000Ω	"	
RCE0139		112	"	"	10kΩ	"	
RCE0247		113	"	"	8200Ω	"	
RCE0138		114	"	"	1000Ω	"	
RCE3893		115	"	1/2W	100Ω	"	
RCR3891		116	"	"	8.2Ω	"	
RCE0137		806	Carbon	1/4W	100Ω	±5%	
RCE0226		807	"	"	560Ω	"	
RCE0198		808	"	"	330kΩ	"	
RCE0216		809	"	"	4700Ω	"	
RCE0238		810	"	"	6800Ω	"	
RCE0227		815	Carbon	1/4W	5600Ω	±5%	
RCE0216		816	"	"	4700Ω	"	
"		817	"	"	"	"	
RCE0228		818	"	"	56kΩ	"	
RCE0227		819	"	"	5600Ω	"	
RCE0191		820	"	"	3000Ω	"	
RCE0167		821	"	"	1800Ω	"	
RCR3899		822	"	1/2W	12Ω	"	
RCR3885		823	"	"	2.2Ω	"	
RCE0186		824	"	1/4W	2700Ω	"	

Part Code	Symbol		Description				Remarks
RCE0177	R	825	Carbon	1/4W	22kΩ	±5%	
RCE0228		826	"	"	56kΩ	"	
RCE0177		827	"	"	22kΩ	"	
RCE0156		828	"	"	1500Ω	"	
RCE0174		829	"	"	22Ω	"	
RCE0147		830	"	"	1200Ω	"	
RCE0166		831	"	"	180Ω	"	
RCE0196		832	"	"	3300Ω	"	
RCE0225		833	"	"	56Ω	"	
RCE0175		834	"	"	220Ω	"	
"		835	"	"	"	"	
RCE0236		836	"	"	68Ω	"	
RCR3883		837	"	1/2W	1Ω	"	
"		838	"	"	"	"	
RCE0138		839	"	1/4W	1000Ω	"	
"		840	"	"	"	"	
RCE0216		841	"	"	4700Ω	"	
RCE0156		842	"	"	1500Ω	"	
RCE0137		843	"	"	100Ω	"	
RCE0158		850	Carbon	1/4W	150kΩ	±5%	
RCE0198		851	"	"	330kΩ	"	
RCE0157		852	"	"	15kΩ	"	
RCE0158		853	"	"	150kΩ	"	
"		854	"	"	"	"	
RCE0157		855	"	"	15kΩ	"	
RCE0247		856	"	"	8200Ω	"	
RCE0176		857	"	"	2200Ω	"	
RCE0196		358	"	"	3300Ω	"	
RCE0247		859	"	"	8200Ω	"	
RCE0138		860	"	"	1000Ω	"	
RCE0186		861	"	"	2700Ω	"	
"		862	"	"	"	"	
RCE0158		863	"	"	150kΩ	"	
RCE0139		864	"	"	10kΩ	"	
RCR3893		865	"	1/2W	100Ω	"	
RZZ0029		866	"	"	10Ω	"	
RMR2976		867	Metal	2W	4700Ω	"	
RMR2951		868	"	1W	10kΩ	"	
RCR3981		869	Carbon	1/2W	82kΩ	"	
RMR2973		875	Metal	2W	33Ω	±5%	
RCE0156		876	Carbon	1/4W	1500Ω	"	
RCR3925		877	"	1/2W	22kΩ	"	
"		878	"	"	"	"	
RCR3895		879	"	"	10kΩ	"	
RCR3957		880	"	"	47kΩ	"	
RCE0104		881	"	1/4W	560kΩ	"	
RCE0217		882	"	"	47kΩ	"	
RWE0001		901	Wire Wound	10W	27Ω	±5%	
RCR3937		902	Carbon	1/2W	330Ω	"	
RCE0176		903	"	1/4W	2200Ω	"	
RCE0156		904	"	"	1500Ω	"	
RCE0136		905	"	"	10Ω	"	
RCR3979		906	"	1/2W	820Ω	"	
			Var. Resistors				
RDR0428	VR	101	Carbon	B	1000Ω		
RDR0429		815	"	B	5000Ω		
RDV0198		816	"	B	"		
RDR0431		850	"	B	50kΩ		
RDV0198		851	"	B	5000Ω		
RDR0430		875	"	B	500kΩ		
RDV0197		901	"	B	1000Ω		
			Capacitors				
CEX0184	C	101	Elyc	16V	33μF		
CEX0172		102	"	10V	330μF		
CEX0180		103	"	16V	100μF		
CEX0185		104	"	"	330μF		
CQA0013		105	Plastic	50V	0.047μF	±10%	
CQA0013		802	Plastic	50V	0.047μF	±10%	
CEX0218		803	Elyc	"	1μF		
CEX0180		804	"	16V	100μF		
CQA0013		815	Plastic	50V	0.047μF	±10%	
CQA0015		816	"	"	0.1μF	"	
CEX0218		817	Elyc	"	1μF		
CSC0173		818	Tantal	16V	10μF	±20%	
CST0398		819	"	"	2.2μF		
CEX0179		820	Elyc	"	10μF		
CEX0184		821	"	"	33μF		
CEX0218		822	"	50V	1μF		
CEX0185		823	"	16V	330μF		

CRT-2 PCB

Part Code	Symbol		Description				Remarks
CEX0180	C	824	Elyc	16V	100μF		
CEX0169		825	"	10V	1000μF		
CEX0218		826	"	50V	1μF		
CEX0184		827	"	16V	33μF		
CEX0220		828	"	50V	3.3μF		
CQA0003		829	Plastic	"	0.001μF	±10%	
CQA0015		830	"	"	0.1μF	"	
CQA0051		850	Plastic	50V	0.0033μF	±5%	
CEX0218		851	Elyc	"	1μF		
CQA0007		852	Plastic	"	0.0047μF	±10%	
CCU0113		853	Ceramic	"	560pF	±5%	
"		854	"	"	"	"	
CEX0179		855	Elyc	16V	10μF		
"		856	"	"	"		
CQA0011		857	Plastic	50V	0.022μF	±10%	
CEX0185		858	Elyc	16V	330μF		
CQA0013		859	Plastic	50V	0.047μF	±10%	
"		860	"	"	"	"	
		861	Not Used				
CQA0005		862	Plastic	50V	0.0022μF	±10%	
CAT0023		863	"	250V	0.22μF	±20%	
CQT0010		864	"	"	0.1μF	"	
CEX0185		865	Elyc	16V	330μF		
"		866	"	"	"		
CQD0012		867	Plastic	630V	0.047μF	±10%	
CQD0006		868	"	"	0.022μF	"	
CMF0048		869	Mica	500V	47pF	±5%	
CQT0012		875	Plastic	250V	0.047μF	±20%	
"		876	"	"	"	"	
"		877	"	"	"	"	
"		878	"	"	"	"	
CEX0248		879	Elyc	450V	1μF		
CEX0238		880	"	160V	3.3μF		
CEX0240		881	"	"	10μF		
CQT0014		882	Plastic	400V	0.1μF	±20%	
CEX0237		883	Elyc	160V	1μF		
CEX0212		884	"	25V	10μF	BP	
CEE0054		901	Elyc	25V	3300μF		
CQA0009		902	Plastic	50V	0.01μF	±10%	
CEX0184		903	Elyc	16V	33μF		
CEX0180		904	"	"	100μF		
			Coils				
TLF0041	L	850	27μH	±10%			
TLL0065		875	LC-0169				
TLL0050		876	LC-0168				
			Transformers				
TTH0006	T	850	HD-12				
TTT0226		851	TC-0448				
			Switch				
SSV0109	SW	801	SSFB12-07P				J type
			Connectors				
JBX0342	P	101	9952#3 (4P) D#9406036				
JBX0344		801	9952#5 (6P) D#9406036				
JBX0341		901	9952#2 (3P) D#9406036				
JBA0075		902	A4-705B-00P (4P)				
JBX0368	J	101	34203#3 (UL, FR200, 4P)				
JBX0367		102	34202#3 (UL, FR200, 3P)				
JYX0262			Pin	29002-2 (for J101)			4 pcs
"			"	" (for J102)			3 pcs
ETZ0068			"	Stopper (for P902)			
			Miscellaneous				
EFL0140	F	901	Fuse	ST5-3A UL			U,C type
EFG0525		901	"	TLC-3A			J,E,K type
EFY0002	XF	901	Fuse Clip	85PN-0815			J,E,K type 2 pcs
ETS0112		901	Terminal	9773			U,C type 2 pcs
"	XR	901	"	"			2 pcs
EHX0023			Heat Sink 4054907 (for Q819 & Q820)				2 pcs

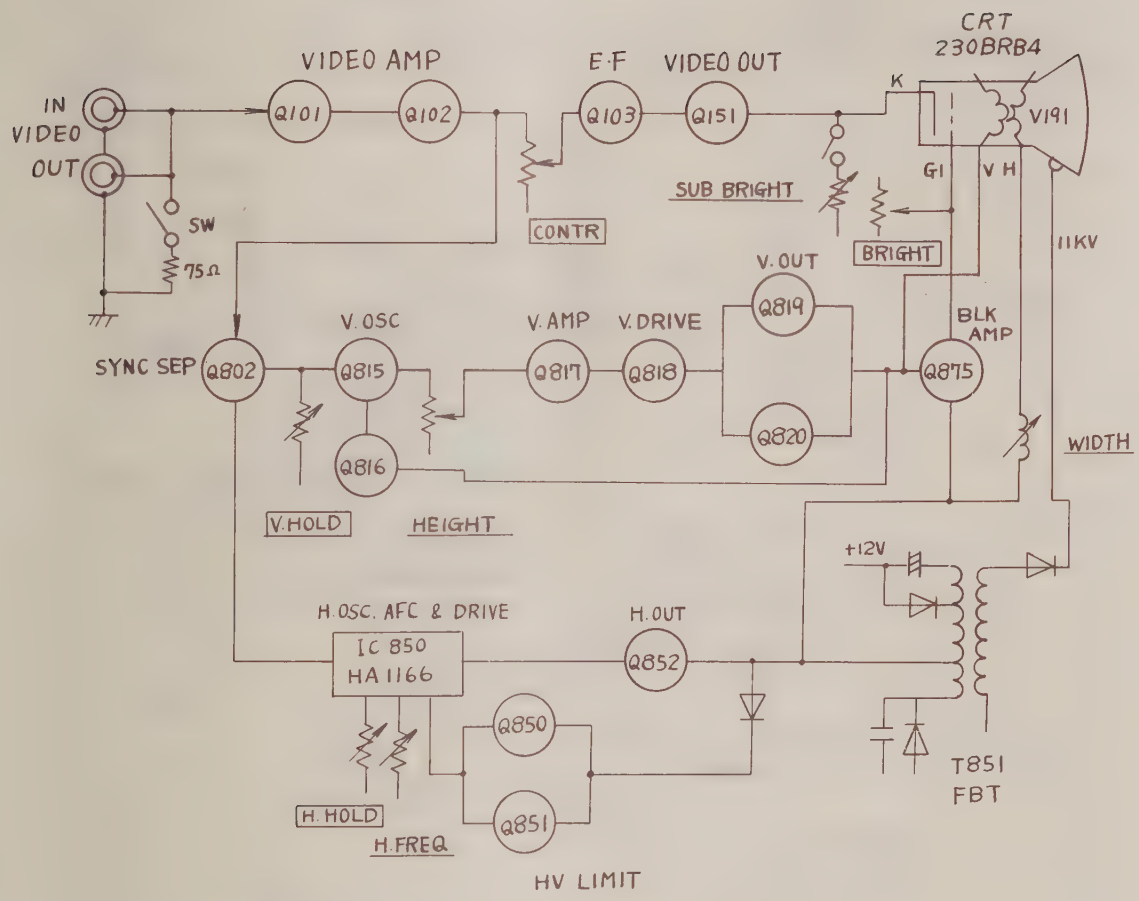
Part Code	Symbol		Description				Remarks
			Trnasistor				
HTC0085	Q	151	2SC1514				
			Diodes				
HDS0110	D	151	1S2076A				
"		152	"				
			Resistors				
RCE0245	R	151	Carbon	1/4W	82Ω	±5%	
RCE0185		152	"	"	270Ω	"	
RCE0214		153	"	"	47Ω	"	
RCE0186		154	"	"	2700Ω	"	
RMR2976		155	Metal	2W	4700Ω	"	
RCE0139		156	Carbon	1/4W	10kΩ	±5%	
RCE0218		157	"	"	470kΩ	"	
"		158	"	"	"	"	
RCE0188		159	"	"	270kΩ	"	
		160	Not Used				
RCE0156		161	Carbon	1/4W	1500Ω	±5%	
		162	Not Used				
RCR4073		163	Carbon	1/4W	2200Ω	±5%	
RCE0178		164	"	"	220kΩ	"	
RCE0140		165	"	"	100kΩ	"	
"		166	"	"	"	"	
			Var, Resistors				
RDV0298	VR	151	Carbon	B	100kΩ		
RDV0299		152	"		1MΩ		
			Capacitors				
CCU0114	C	151	Ceramic	50V	390pF	±5%	
CEX0172		152	Elyc	10V	330μF		
CCU0113		153	Ceramic	50V	560pF	±5%	
CEX0242		154	Elyc	250V	3.3μF		
CQT0026		155	Plastic	"	0.47μF	±20%	
CEX0240		156	Elyc	160V	10μF		
CQT0016		158	Plastic	400V	0.047μF	±20%	
			Coils				
TLF0019	L	151	33μH	±10%			
TLF0038		152	68μH	"			
			Switch				
SSV0109	SW	151	SSF812-07P				
			Connectors				
JBX0342	P	151	9952#3 (4P) D#9406036				
JBX0341		152	9952#2 (3P) D#9406036				
ETP0069		153	GT Contact Pin				
			Miscellaneous				
DYX0010	J	151	CRT Socket		1426#2		
EZZ0056	SG	151	Spart Gap	AG20	2kV		
"		152	"	"			
"		153	"	"			
"		154	"	"			

CHASSIS

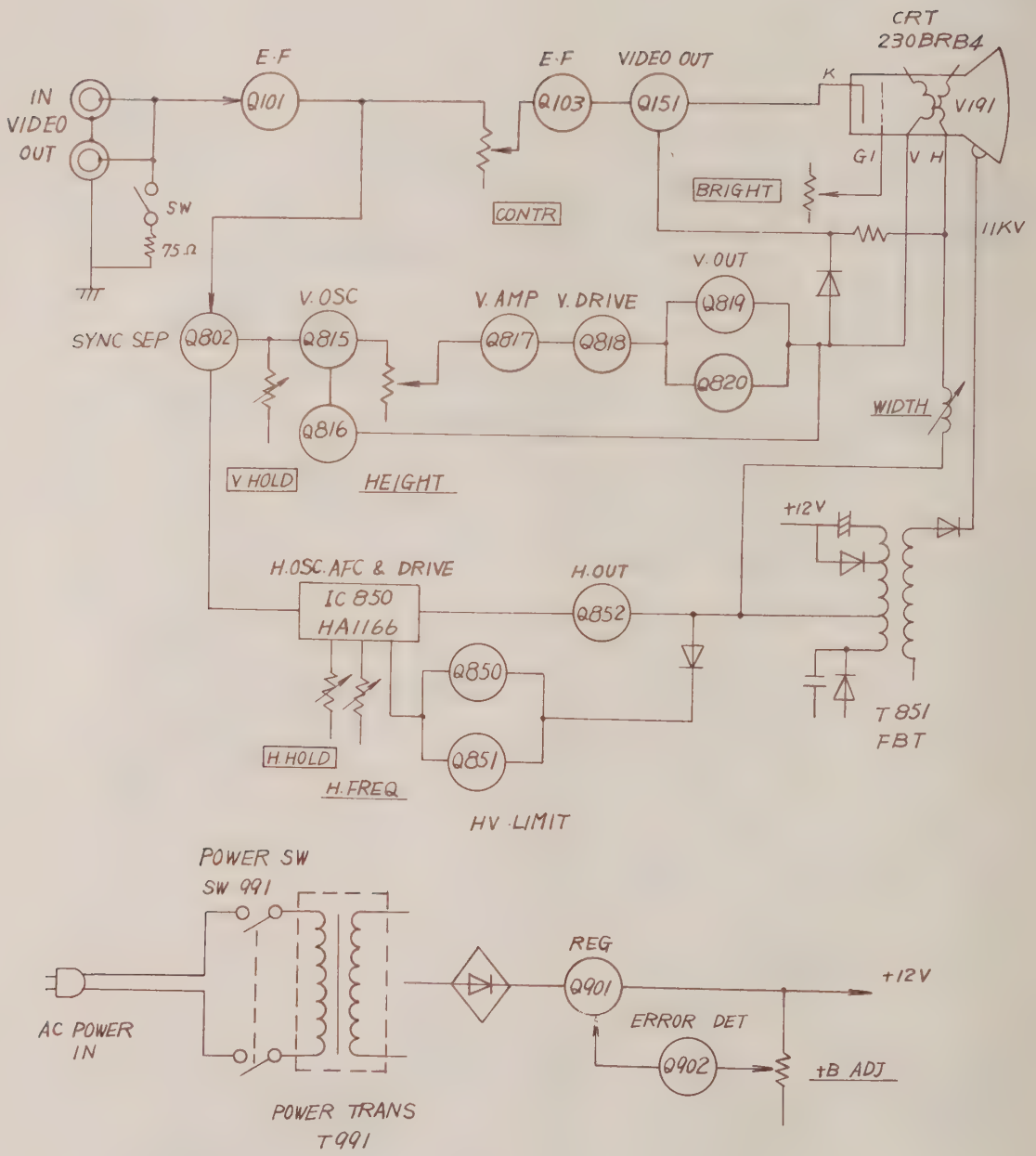
Part Code	Symbol		Description	Remarks
DPX0034	V	191	CRT 310FRB4	
			Coil	
TLL0115	DY	891	LC-0165C	
			Transformers	
TLL0116	T	991	LC-0444A	J type
TTT0117		991	TC-0445 (UL)	U,C type
TTT0130		991	TC-0464	E,K type
			Switches	
SSV0105	SW	191	SS(F) 12-07	
SSS0063		991	SDE-4SB-2 (UL, CSA) TV-3	
			Connectors	
JBX0368	J	191	34203#3 (UL, FR200, 4P)	
JBX0374		194	34338 (1P)	
JBX0370		891	34205#3 (UL, FR200, 6P)	
JBX0367		991	34202#3 (UL, FR200, 3P)	
			Miscellaneous	
JYX0169			Pin 29000 (for J194)	
JYX0262			" 29002-2 (for J891)	6 pcs
"			" (for J991)	3 pcs
"			" (for J191)	4 pcs
BBZ0073	P	991	Code Set VM-1165B	J type
BBZ0060		991	" STV#18 VM-033	U type
BBZ0055		991	" VM-0099	E,K type
BBZ0159		991	" SJT#18 VM-033	C type

8. BLOCK DIAGRAMS

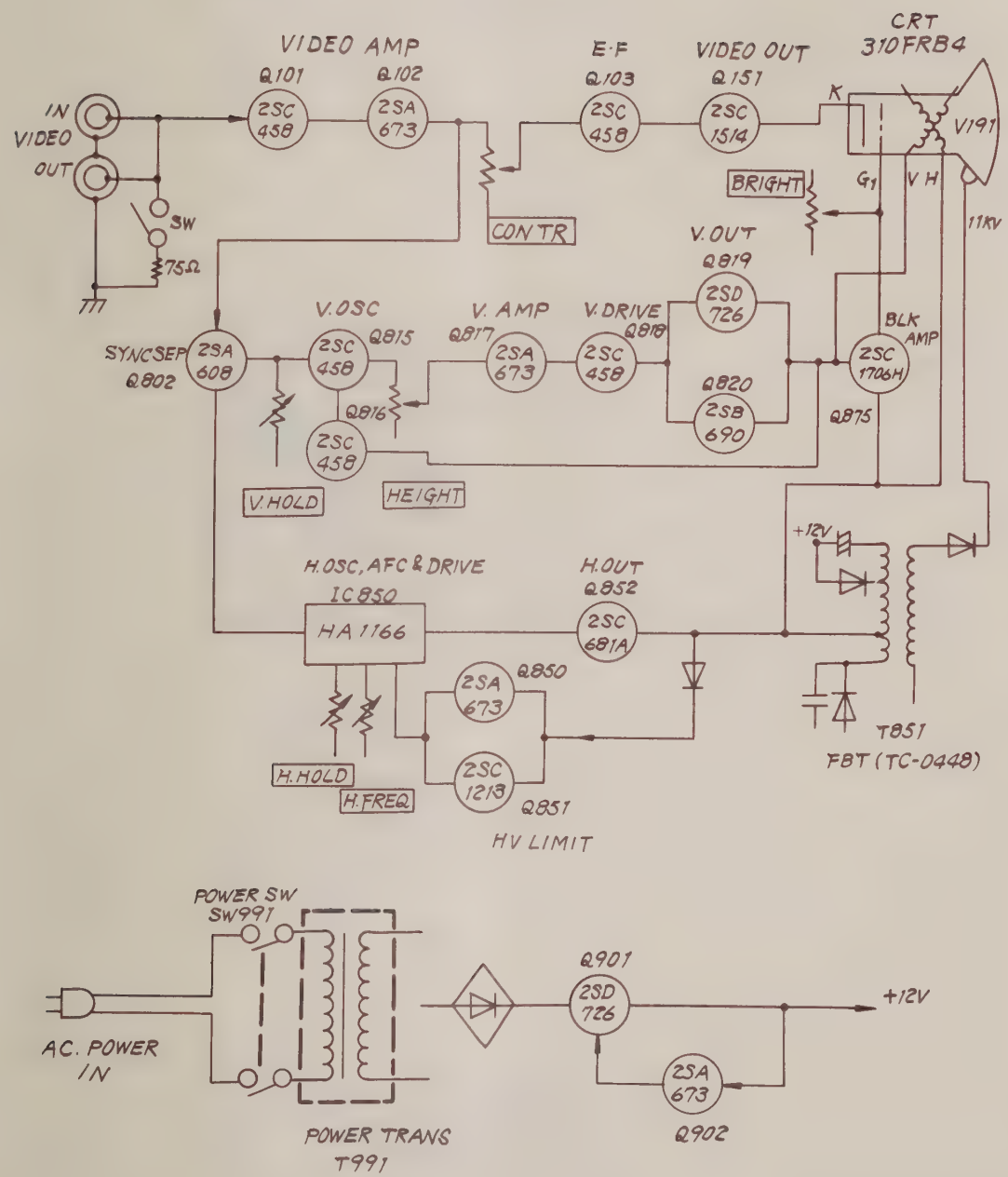
8.1 MODEL VM-906

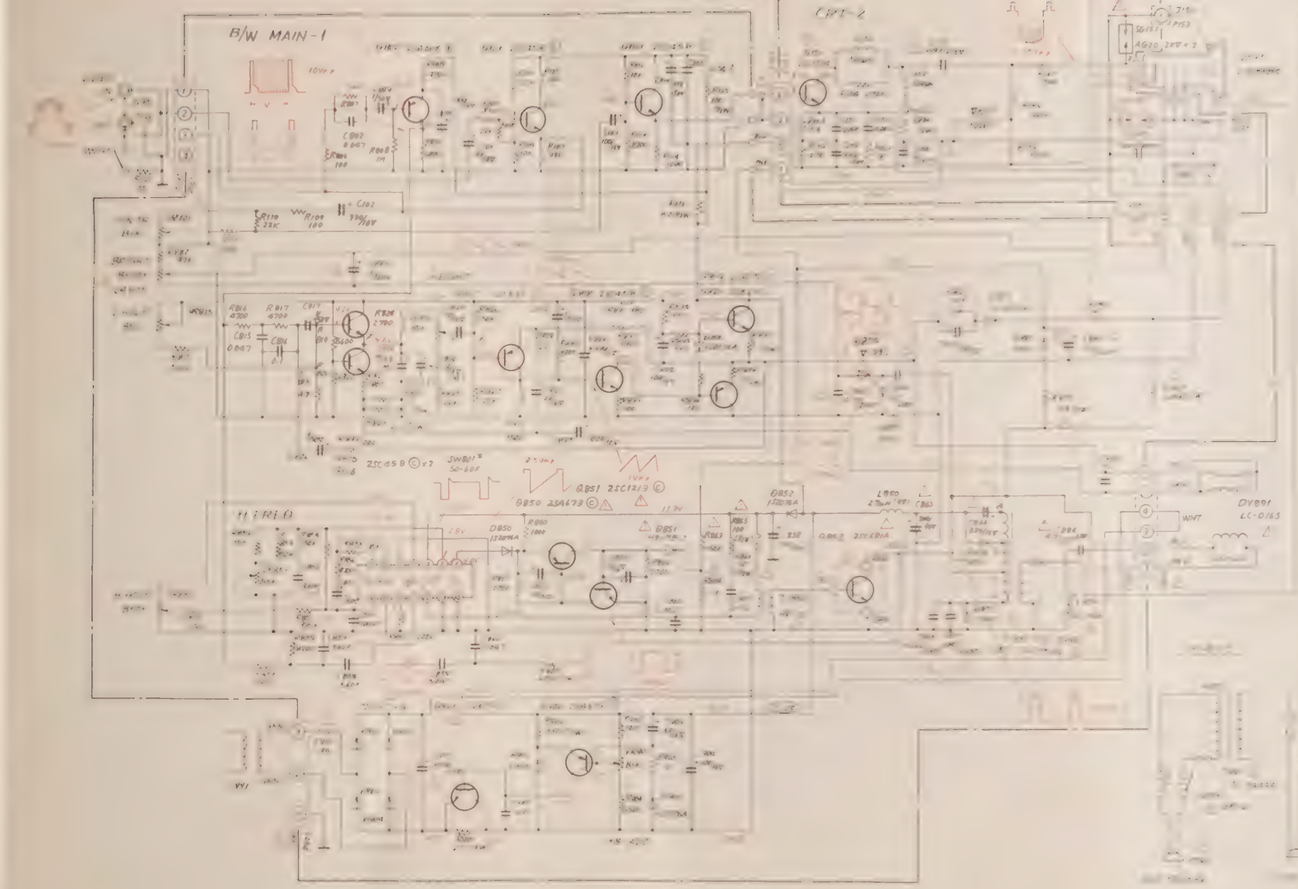


8.2 MODEL VM-910



8.3 MODEL VM-129





Block diagram for IC 850 HA 1166

Notes:

1 Unless otherwise specified, all resistors are in ohms, 1/4 watt.

2 Unless otherwise specified all capacitors are in μF.

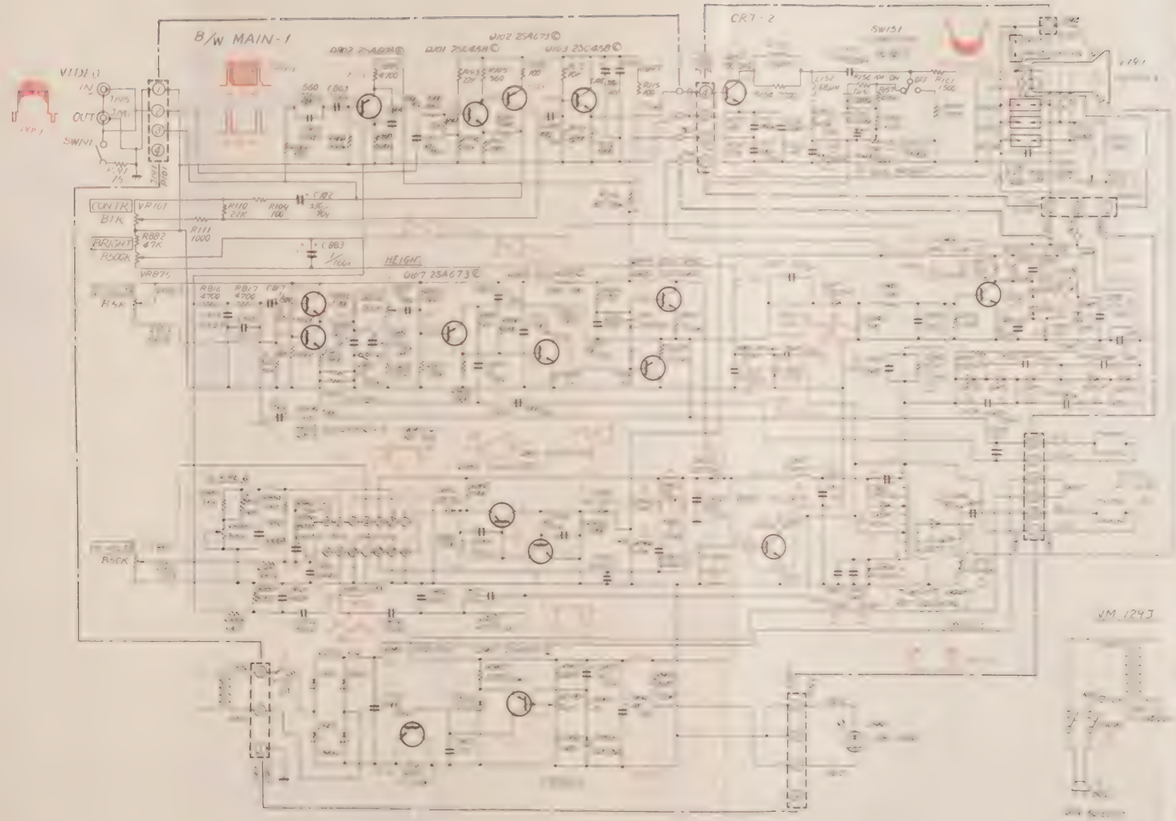
3 ⚠ Used only for J type.

PRODUCT SAFETY NOTICE

- This schematic diagram is for serviceman only -

Component marked with a ⚠ have special characteristics important to safety. Before replacing any of these components read carefully the "PRODUCT SAFETY NOTICE" of Service Manual. Do not degrade the safety of the MONITOR through improper servicing.

Fundamental schematic diagram differences may be found between this schematic diagram and the servicing unit due to various improvements made hereafter.



Block diagram for IC 850 HA1166

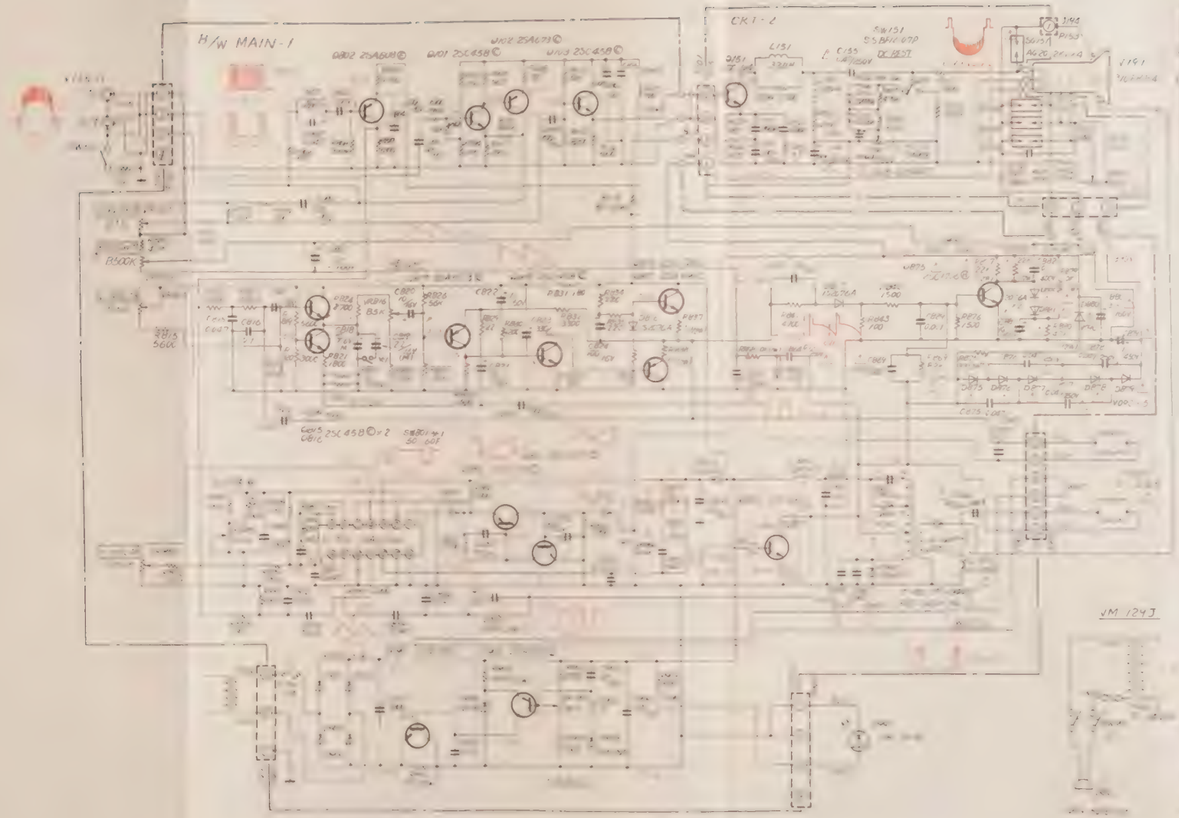
Notes

1. Unless otherwise specified, all resistors are in Ohms, 1/4 watt
2. Unless otherwise specified, all capacitors are in uF
3. *1 J type: SW801 CB18 and CB19 are used
   U type: SW801 and CB19 are not used
   E,K type: SW801 is not used, and CB18 CB19 are connected in parallel.
4. *2 *3 Factory adjusted

Product safety note

marked with a ⚠ have special characteristics important to safety. Before replacing any of these components read carefully the "PRODUCT SAFETY NOTICE" of Service Manual. Do not degrade the safety of the MONITOR through improper servicing.

MODEL VM-129
VIDEO MONITOR
SCHEMATIC DIAGRAM 33


H/W MAIN-1
CK1-2
Notes
1. Unless otherwise specified, all resistors are in Ohms, 1/4 watt
2 Unless otherwise specified, all capacitors are in uF
3 *1 J type SW801 CB1E and CB19 are used
U type SW801 and CB19 are not used
E/K type SW801 is not used, and CB19 and CB19 are connected in parallel.
4 *2 *3 Factory adjusted
Product safety note
Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components read carefully the "PRODUCT SAFETY NOTICE" of Service Manual. Do not degrade the safety of the MONITOR through improper servicing.
VM-124J
VM-124U,C
VM-129E,K

MODEL VM-129
VIDEO MONITOR
SCHEMATIC DIAGRAM 33

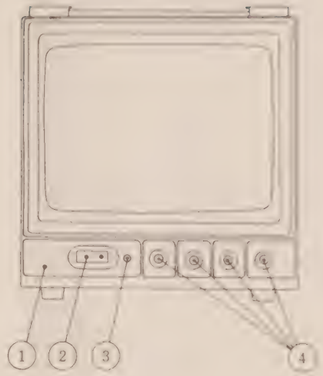
10. MECHANICAL PARTS LIST AND EXPLODED VIEW

10.1 MODEL VM-906

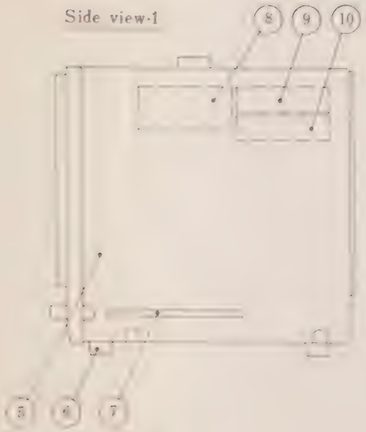
1) CRT replacement
   1. Remove 4 control knobs (4).
   2. Take out 2 screws from both sides of front mask (1) and remove front mask.
   3. Take out 2 screws each from top and bottom of rear cover (24) and remove rear cover.
   4. Remove deflection yoke (17) and CRT-2PC board (18).
   5. Remove 4 CRT mounting nuts.
   6. Remove CRT from front of unit and replace.
   7. Reassembly by reversing above steps.

2) B/W MAIN PC board replacement
   1. Remove 4 control knobs (4).
   2. Take out 2 screws from both sides of front mask (1) and remove front mask.
   3. Take out 2 screws each from top and bottom of rear cover (24) and remove rear cover.
   4. Place monitor on its side and take out 4 screws from both sides of cabinet.
   5. Place chassis (28) in the normal position.
   6. Disconnect connectors of B/W MAIN-1 PC board.
   7. Take out 2PC board mounting screws (at side of heatsink (12)). (At opposite side held by PC board holder.)
   8. Remove PC board and replace.
   9. Reassemble by reversing above steps.

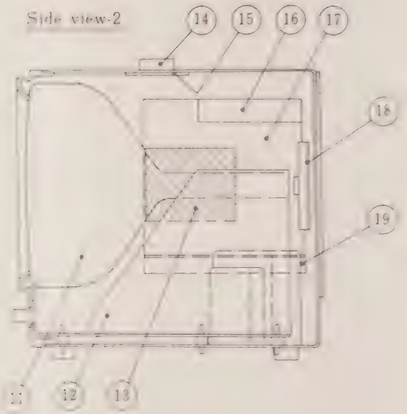
Front view



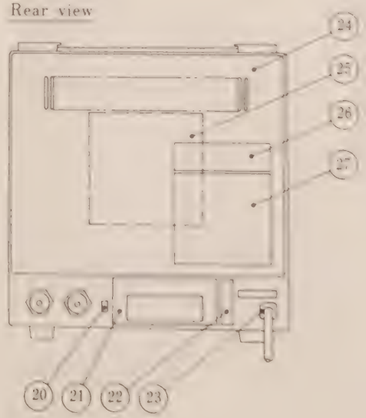
Side view-1



Side view-2

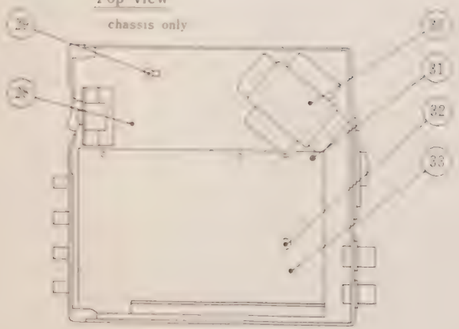


Rear view



Top view

chassis only



MODEL VM-906
EXTERNAL VIEW

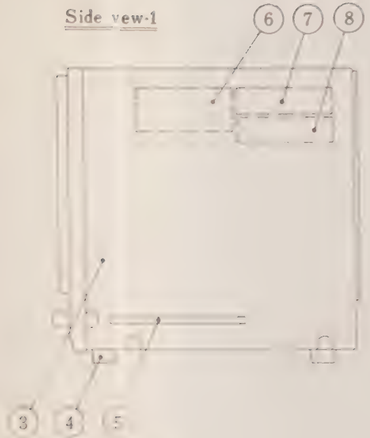
10.2 MODEL VM-910

1) CRT replacement
   1. Take out 2 screws from both sides of front mask (1) and remove front mask.
   2. Take out 2 screws each from top and bottom of rear cover (20) and remove rear cover.
   3. Remove deflection yoke (17) and 2 P-2PC board (14).
   4. Remove 4 CRT mounting nuts.
   5. Remove CRT from front of set and replace.
   6. Reassemble by reversing above steps.

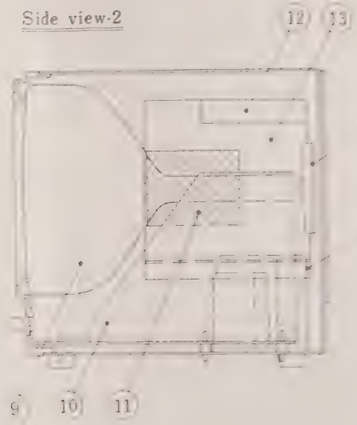
2) B.W MAIN PC board replacement
   1. Take out 2 screws from both sides of front mask (1) and remove front mask.
   2. Take out 2 screws each from top and bottom of rear cover (20) and remove rear cover.
   3. Place monitor on its side and take out 4 screws from both sides of cabinet (3).
   4. Place chassis (23) in the normal position.
   5. Disconnect connectors of B.W MAIN PC board.
   6. Take out 2 PC board mounting screws at side of heat sink (19).
      (At opposite side held by PC board holder.)
   7. Remove PC board and replace.
   8. Reassemble by reversing above steps.

Front view

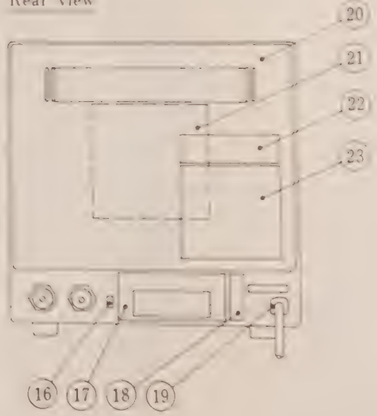
Side view-1



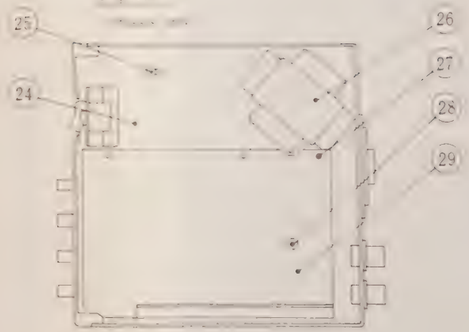
Side view-2



Rear view



Top view



MODEL VM-910
EXTERNAL VIEW

10.3 MODEL VM-129

1) CRT replacement

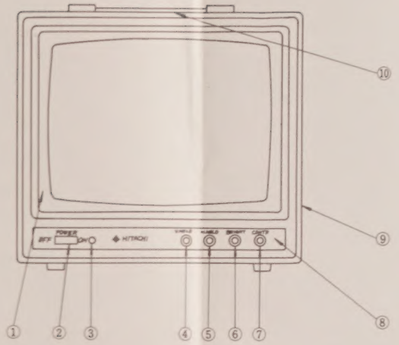
1. Remove control knobs ④ ⑤ ⑥ ⑦.
2. Take out 2 screws of both sides of front mask ① and remove front mask.
3. Take out 2 screws each from top and bottom of rear panel ⑰ and remove rear panel.
4. Remove deflection yoke ㉔ and CRT-2 PC board ㉓.
5. Remove 4 CRT mounting nuts.
6. Remove CRT from front of unit and replace.
7. Reassembly by reversing above steps.

2) B/W MAIN PC board replacement

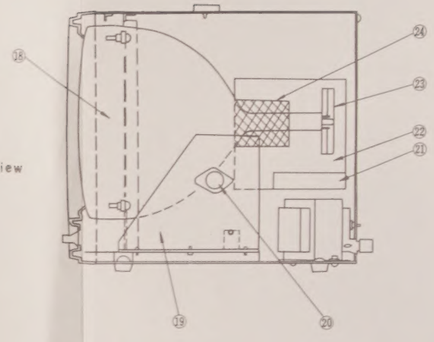
1. Remove control knobs ④ ⑤ ⑥ ⑦.
2. Take out 2 screws from both sides of front mask ① and remove mask.
3. Remove pilot lamp connector J992.
4. Take out 2 screws each from top and bottom of rear panel and remove panel.
5. Place monitor on its side and take out 6 screws from bottom panel of cabinet ⑨.
6. Place chassis ㉛ in the normal position.
7. Disconnect connectors of B/W MAIN-1 PC board.
8. Take out 2 PC board mounting screws [at side of heatsink ⑲]. (At opposite side held by PC board holder.)
9. Remove PC board and replace.
10. Reassemble by reversing above steps.

Symbol	Description		Remarks	Part Code
1	Mask			1003248.A
2	Power Switch	SDE-45B-2	SW991	(J3102900B)
3	Pilot lamp	SR-1010 RED	DW91	(HZ2190004)
4	Knob, Var. Resistor			4C44957.A
5	"			"
6	"			"
7	"			"
8	Front panel			3024807.A
9	Cabinet			1003072.A
10	Handle			4053616.A
12	Foot			3022087.A
13	Bush, Power Cord		U,C type	4054728.B
	"		E,K type	4054721C
14	Switch	SS(F) 12-07	SW191	(J3200004F)
15	UL, CSA, Label			4054275.A
16	CSA Label			4054276.A
17	Rear cover			3024611.A
18	Picture Tube	310FRB4		(H4612004)
19	Heat Sink			3024612.A
20	Transistor	2SC681 ARD	Q852	(H2330001)
21	X-Ray Label		E type	4054315.A
22	UL Label		U,C type	4051777.A
23	CRT-2 PCB			(3024790)
24	Deflection Yoke	LC-0165(2440804)	DY891	(K4262902F)
25	Lug C1			4044797.E
26	PCB Holder			4051027.A
27	B/W MAIN-1 PCB			(2012674)
28	CSA Fuse Label		C type	4051106.A
29	Fuse Label		U,C type	4052915.A
30	Power Transformer	TC-0445	U,C type	(J1211007T)
	"	TC-0446	E,K type	(J1211007Z)
31	Chassis			2012658.A

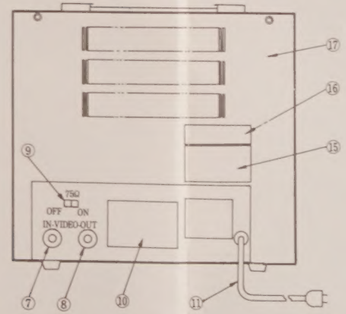
Front view



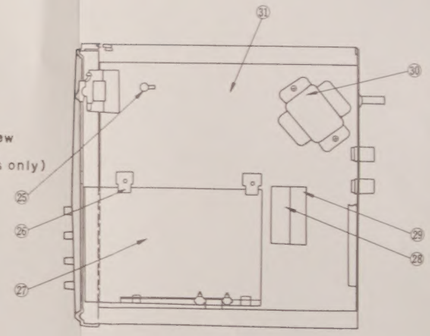
Side view



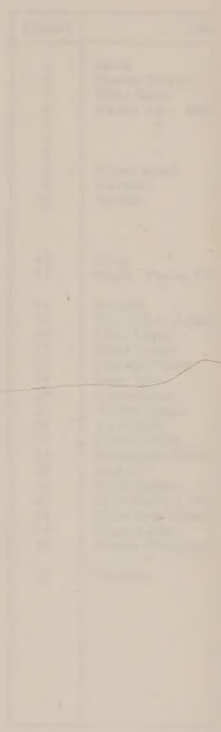
Rear view



Top view
(chassis only)



MODEL VM-129
EXTERNAL VIEW



HITACHI DENSHI, LTD.

23-2, Kanda Suda-cho 1-chome, Chiyoda-ku, Tokyo 101, Japan
Phone:(03)255-8411, Telex:)24178

HITACHI DENSHI AMERICA, LTD.*

Headquarters and New York Office:
175 Crossways Park West, Woodbury, New York 11797, U.S.A.
Phone:(516)921-7200, FAX:516-921-3545, 516-496-3718, TWX:510-221-1899

Washington D.C. Office:
4720 P Boston Way, Lanham, Maryland 20801, U.S.A.
Phone:(301)459-8262, FAX:301-459-8350

Chicago Office:
1725 North 33rd. Ave., Melrose Park, Illinois 60160, U.S.A.
Phone:(312)344-4020, FAX:312-344-9842

Cincinnati Office:
11250 Cornell Park Drive, Suite 206, Cincinnati, Ohio 45242, U.S.A.
Phone:(513)489-6500, FAX:513-489-0184

Los Angeles Office:
Victoria Business Park
18005 South Adria Maru Lane, Carson, California 90746, U.S.A.
Phone:(213)538-4880, FAX:213-532-6851

Dallas Office:
14169 Proton Road, Dallas, Texas 75234, U.S.A.
Phone:(214)233-7623, FAX:214-385-1669

Atlanta Office:
3610 Clearview Parkway, Doraville, Georgia 30340, U.S.A.
Phone:(404)451-9453, FAX:404-451-0501

Denver Office:
3538 Peoria, Bldg. 3,
Suite 505, Aurora, Colorado 80010, U.S.A.
Phone:(303)344-3156, FAX:303-343-8303

Seattle Office:
370 Upland Drive, Tukwila, Washington 98188, U.S.A.
Phone:(206)575-1680

Distribution Center:
1051 Andover Park West, Tukwila, Washington 98188, U.S.A.
Phone:(206)575-1690, FAX:206-575-3320, 206-575-1778, TWX:910-444-2155

HITACHI DENSHI, LTD. (CANADA)*

Head Office:
65 Merford Drive, Scarborough, Ontario M1B 2G8, Canada
Phone:(416)299-5900, Telex:652-5324

Quebec Office:
8100-G Trans-Canada, St.Laurent, Quebec, H4S 1M5, Canada
Phone:(514)332-6687, Telex:582-5739

Western Office:
3433-12th St. North-East, Calgary, Alberta T2E 6S6, Canada
Phone:(403)276-8508, Telex:382-5861

HITACHI DENSHI (EUROPA) G.m.b.H.*

Head Office:
Weiskircher Strasse 88
D-6054 Rodgau 1 (Jugesheim), West Germany
Phone:(06106)3027-9, Telex:417-849, FAX:610-8-9029

HITACHI DENSHI (U.K.) LTD.*

Head Office:
Garrick Industrial Estate, Garrick Road, Hendon, London NW9 9AP, United Kingdom
Phone:(01)202-4311, Telex:27449, FAX:44-1-202-2451

Leeds Office:
Video House, 55 Manor Road, Leeds, LS11, 5PZ, United Kingdom
Phone:0532-30294

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